

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2011810PC/or	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/FI 2003/000038	International filing date (day/month/year) 20.01.2003	Priority date (day/month/year) 21.01.2002
International Patent Classification (IPC) or national classification and IPC F16L 47/00		
Applicant Unponor Innovation AB et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand 04.08.2003	Date of completion of this report 09.02.2004
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2003/000038

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☒ This report is based on a translation from the original language into the following language English, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☒ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 7 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* 9 - 11 received by this Authority on 28.01.2004

pages* _____ received by this Authority on _____

☒ the drawings:

pages 1 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2003/000038

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-20</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-20</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-20</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The following documents are cited:

D1: DE 20014785 U1
D2: JP 03184817 A
D3: GB 1481256 A
D4: US 4979679 A
D5: EP 1031781 A2
D6: WO 8804388 A1

From document D1 a plastic fitting for joining plastic or compound plastic/metal drinking-water pipes is known, comprising a carrier element (22) with a seating for a pipe end (34), and a conduit section (14) for water. The carrier element (22) and conduit section (14) are joined mechanically (24) together to improve the attachment between the two parts, see for example page 3, lines 32-33.

From document D2 a plastic multi-layer tube joint consisting of a cylindrical inner layer is known. The outer surface of the inner layer (1) is equipped with a number of projections (1a) joining the two layers mechanically together.

From document D3-D6 characteristics included in the dependent claims of the application are known. Document D3 shows a pipe fitting comprising a third intermediate layer (11) made of a flexible material, see page 2, lines 99-104. From document D4 it is known to use metallic diffusion to protect solar ultraviolet sensitive materials, see column 3 and lines 1-6. Document D5 shows a pipe fitting comprising a compression collar (6), see figure 1. Document D6 shows a form stable heat insulating bowl adapted to be mounted around a pipe installation, corresponding to a separate replaceable part as stated in the application.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: BOX V.

The fitting/joint known from in document D1 and D2, which are considered to represent the most relevant prior art, does not show that the surfaces of the innermost layer and the surface of the outer layer are able to move relative to each other, as defined in independent claim 1 in the application. The pipe fitting/joint in D1 and D2 rather shows that the surfaces should be joined together, and they are also equipped with means (24 and 1a) to improve the attachment.

None of the cited documents D1-D6 gives any indication that would lead towards the claimed pipe fitting according to claim 1-20. No relevant combination of the cited documents would lead a person ordinary skilled in the art to the invention defined in claims 1-20. Therefore, the invention according to these claims is not considered obvious to a person skilled in the art.

The pipe fitting defined in claims 1-20 is not disclosed in any of the documents D1-D6.

Accordingly, the pipe fitting defined in claim 1-20 is novel and is considered to involve an inventive step. It is industrial applicable.

Note that dependent claim 19 as claims originally were filed, is considered to lack unity. Claim 19 relate to a composite pipe having a plastic inner layer and a metal layer outside it, being connected to a pipe fitting, which pipe fitting is according to claim 1 as originally filed known. As the invention according to amended independent claim 1 is considered to be novel claims now include same special technical features. Therefore, dependent claim 19 is considered not lacking unity of invention.

DT12 Rec'd PCT/PTO 20 JUL 2004

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CLAIMS

1. A pipe fitting for connecting at least two pipes (4), which pipe fitting (1) comprises at least two layers in such a way that the innermost layer (2) is made of a material different from the outer layer (3), and that the innermost layer (2) is made of plastic tolerating high temperatures, and that the outer layer (3) is formed of such a material that the outer layer (3) is arranged to function as the provider of oxygen diffusion protection and/or the UV protector, **characterized** in that the materials of the different layers are selected in such a way that the outer layer (3) is not attached to the innermost layer (2), such that the surfaces of the innermost layer (2) and the outer layer (3) are able to move relative to each other.

2. A pipe fitting according to claim 1, **characterized** in that the outer layer is arranged to function as the provider of chemical resistance.

3. A pipe fitting according to claim 1 or 2, **characterized** in that the outer layer (3) is arranged to function as mechanical reinforcement.

4. A pipe fitting according to any one of the preceding claims, **characterized** in that the innermost layer (2) is made of polyphenyl sulphone PPSU, polysulphone PSU or polyvinylidene fluoride PVDF.

5. A pipe fitting according to any one of the preceding claims, **characterized** in that the outer layer (3) is made of polyamide PA, polypropylene PP or polyethylene PE.

6. A pipe fitting according to any one of the preceding claims, **characterized** in that the walls of the innermost layer (2) are formed smooth.

7. A pipe fitting according to any one of the preceding claims, **characterized** in that there is an intermediate layer (7) between the innermost layer (2) and the outer layer (3).

8. A pipe fitting according to claim 7, **characterized** in that the intermediate layer (7) is a foamed plastic material layer.

9. A pipe fitting according to any one of the preceding claims, **characterized** in that the outer surface of the pipe fitting (1) is of the same colour as the pipe (4) to be connected to the pipe fitting.

10. A pipe fitting according to any one of the preceding claims, **characterized** in that the end of the outer layer (3) is arranged to function as the stop member of the pipe (4) to be inserted into the pipe fitting

(1).

11. A pipe fitting according to any one of the preceding claims, **characterized** in that the UV protection of the outer surface of the pipe fitting is intensified with metal or mica pigment.

5 12. A pipe fitting according to any one of the preceding claims, **characterized** in that a compression collar (5) is arranged to be used to guarantee the connection between the pipe fitting (1) and the pipe (4).

10 13. A pipe fitting according to claim 12, **characterized** in that the outer diameter of the pipe fitting (1) is arranged to be equal to the outer diameter of the compression collar (5).

14. A pipe fitting according to claim 12 or 13, **characterized** in that the colour of the compression collar (5) is substantially the same as the colour of the pipe fitting (1).

15 15. A pipe fitting according to claim 14, **characterized** in that the outer surface of either the compression collar (5) or the pipe fitting (1) is embossed.

16. A pipe fitting according to any one of claims 12 to 15, **characterized** in that the end of the compression collar (5) on the side of the pipe (4) is rounded.

20 17. A pipe fitting according to any one of claims 12 to 16, **characterized** in that a support (10) is intended to be used in connection with the pipe fitting (1), the support having a support collar (11) whose width is substantially equal to the width of the compression collar (5) and whose outer diameter is substantially equal to the outer diameter of the
25 compression collar (5).

18. A pipe fitting according to claim 17, **characterized** in that the pipe (4), the support (10), the pipe fitting (1) and the compression collar (5) are substantially of the same colour.

30 19. A pipe fitting according to any one of the preceding claims, **characterized** in that in connection with the pipe fitting a plastic composite pipe having a plastic innermost layer and a metal layer outside it is intended to be used; that the outer surface of the plastic composite pipe is of metal colour, the colour being provided by using a transparent extruded plastic material upon the metal layer, or in such a way that a surface is extruded upon
35 the metal, which surface is coloured using pearlescent, metal-coloured or mica pigments.

20. A pipe fitting according to any one of the preceding claims,
characterized in that the outer layer (3) is formed as a separate and
replaceable part.